REMARKS/ARGUMENT:

Claims 1-5, 7-11 and 13-14 are pending in this application, as this Amendment cancels claims 6 and 12. The final Office action dated January 30, 2006 made the following final rejections:

claims 1-3 and 7-9 over the combination of Horie with Iwane;

claims 4-5 and 10-11 over the combination of Horie, Iwane and Hickman;

claims 6 and 12 over the combination of Horie, Iwane and Damgaard.

1. The Applicant re-asserts that no reference teaches or suggests "means for rectifying the input local oscillator signal to provide a conductance waveform at a multiple of the local oscillator" as recited in claim 1. In reply to the Applicant's previous assertion of this shortfall in Horie, the Office Action refers to the frequency multiplier 17 of Horie Figure 5, which is described at col. 3 lines 64-66 as "a frequency multiplier 17 for frequency multiplying the output oscillation signal SA from the frequency synthesizer 16,". Further description of that element at col. 4 lines 8-9, 25 and 29 does not describe any further function for it other than frequency multiplying, and multiplying a signal is distinct from rectifying it. As such, Horie does not disclose, teach or suggest that the frequency multiplier operates as a means for rectifying.

To rectify a signal, some fundamental alteration to the signal current profile must occur. For example, commonly understood rectifiers can impose a non-linear directional constraint to current flow, or block or invert one lobe of a wave type signal profile (i.e., a half-wave or a full-wave rectifier). These are all well understood as being rectifiers. The frequency multiplier 17 of Horie merely multiplies frequency; there is no change to the signal current profile apart from increasing frequency, which in a signal profile is akin to merely changing scale. Multiplying frequency is not understood in the art as rectifying a signal. In contrast, embodiments of the invention rectify the signal through the bipolar transistor pairs through which current is controlled. The Applicant re-asserts that the rejection to claim 1 fails to set forth a prima facie case for obviousness, because all claim elements are not within the purported combination of references. See MPEP 2143.03.

Neither Iwane nor Hickman are seen to disclose means for rectifying a local oscillator input signal to provide a conductance waveform at a multiple of the local oscillator, and the Office

Action does not assert that either or both do so teach, so claim 1 is seen to be patentable over the cited art. Claims 2-5 and 13 depend from claim 1 and should be patentable at least for that dependency.

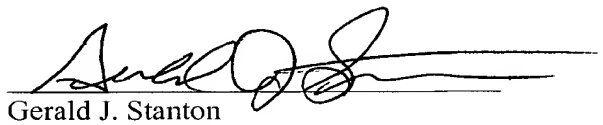
2. Independent claims 1 and 7 each recite: "a means for controlling the gain of the modulator thereby to control the output level of the modulator". This claim language clearly recites that the gain *of the modulator* is controlled, thereby to control *the output level* of the modulator. To this element, the Office Action cites to the variable attenuator 16 at Iwane's Figure 2. It is clear from that figure, and from the corresponding description at col. 2 line 66 to col. 4 line 56, that the variable attenuator 16 is separate and distinct from the modulator 15, and controls gain on a signal that is already output from the modulator 15. Specifically, Iwane describes the internal elements of the quadrature modulator (15) as an adder (15c) and two multipliers (15a) and (15b) (Figure 2 and col. 3, lines 43-44). No gain control is seen within the Iwane modulator 15, but rather gain control is applied to the modulated signal (by the variable attenuator 16 and a separate RF power amplifier 5, see Iwane Figure 2 and col. 3, lines 46-51) after that signal is output from the modulator.

This claim clause is written so as to incorporate the benefit noted at page 1 lines 17-18 of the application (reduction in the number of elements and devices in the RF transmit strip would be beneficial) by reciting gain control that controls an *output level* of the modulator. Controlling gain *within* an embodiment of the inventive modulator, prior to outputting a modulated signal, is detailed at page 7 lines 3-6 of the written description, where the two current controllers and the gain input node of Figure 1 operate to increase or decrease current in the long tail bipolar transistor pairs Q1-Q2 and Q3-Q4. These transistor pairs and the gain node form a part of the modulator itself, so the modulator *output level* is adjusted by manipulating current through those transistor pairs. By the plain language of this claim clause, it is the output level of the modulator that is controlled.

In marked contrast, both Horie and Iwane output a modulated signal and subsequently adjust gain. These references clearly show adjusting gain of the modulated signal, but that is not what claims 1 and 7 recite. Because no reference, alone or in combination, teaches or suggests "controlling the gain of the modulator thereby to control the output level of the modulator" as recited in claims 1 and 7, these claims are seen as patentable over the cited art. For at least that reason, dependent claims 2-5, 8-8-11, and 13-14 should also be patentable.

The Examiner is respectfully requested to review the cited art in view of the above detailed arguments. The Applicant is confident that an objective review will find independent claims 1 and 7 patentable over the cited art, in which case the Examiner is requested to withdraw the rejections and pass claims 1-5, 7-11 and 13-14 to issue. The undersigned representative welcomes the opportunity to resolve any matters that may remain, formal or otherwise, via teleconference at the Examiner's discretion.

Respectfully submitted:



April 6, 2006
Date

Gerald J. Stanton
Reg. No.: 46,008

Customer No.: 29683
HARRINGTON & SMITH, LLP
4 Research Drive
Shelton, CT 06484-6212
Phone: (203) 925-9400
Facsimile: (203) 944-0245
Email: gstanton@hspatent.com

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

April 6, 2006
Date

Name of Person Making Deposit